

## Title (en)

Process for estimating the channel from the PSS signal in a LTE communication network, and receiver for the same

## Title (de)

Verfahren zur Kanalschätzung aus einem PSS-Signal in einem LTE-Kommunikationsnetzwerk und ein dazugehöriger Empfänger

## Title (fr)

Procédé d'estimation d'un canal à partir d'un signal PSS dans un réseau de communication LTE et récepteur correspondant

## Publication

**EP 2264961 A1 20101222 (EN)**

## Application

**EP 09368020 A 20090619**

## Priority

EP 09368020 A 20090619

## Abstract (en)

A Method for estimating the channel in a Long Term Evolution (LTE) communication system, said method involving the step of extracting a Primary Synchronization Signal (PSS) from a received signal and further involving the step of spanning said PSS based Least Square (LS) channel estimation on the 64 sub-carriers so as to facilitate the MMSE channel estimation. Preferably, the spanning is performed by means of an interpolation of the particular sub-carriers which are not allocated to said PSS (#-32, d.c.) The method involves the steps of: - Perform LS channel estimation on the 62 sub-carriers containing the PSS (40) - reconstruct the LS channel estimation on the 64 central sub-carriers by interpolating (41) on subcarriers not allocated to said PSS; - Apply (42) an Inverse DFT or Inverse Fast Fourier Transform - Extract (43) the L first samples, with L corresponding to the length of the channel; - multiply (44) by  $F L H \# \text{c} F L + \tilde{A} 2 \# \text{c} C h - 1 - 1$  - Zero-pad (45) the resulting signal to length 64 ; - Apply (46) a DFT or an FFT

## IPC 8 full level

**H04L 25/02** (2006.01)

## CPC (source: EP US)

**H04L 5/0048** (2013.01 - EP US); **H04L 25/0226** (2013.01 - EP US); **H04L 25/0232** (2013.01 - EP US); **H04L 25/0244** (2013.01 - EP US); **H04L 25/025** (2013.01 - EP US); **H04L 25/0256** (2013.01 - EP US); **H04L 27/2647** (2013.01 - EP US); **H04L 5/0007** (2013.01 - EP US); **H04L 25/0216** (2013.01 - EP US)

## Citation (applicant)

"SESIA Stefania, TOUFIK Issam, BAKER Mattew", 2009, WILEY, article "LTE - The UMTS Long Term Evolution: from Theory to Practice"

## Citation (search report)

- [Y] US 2008240314 A1 20081002 - GAAL PETER [US], et al
- [Y] SATOSHI NAGATA ET AL: "Investigations on Synchronization Channel Sequences in OFDM Based Evolved UTRA Downlink", IEEE 66TH VEHICULAR TECHNOLOGY CONFERENCE, VTC-2007, 1 September 2007 (2007-09-01), NY, US, pages 1390 - 1395, XP031147635, ISBN: 978-1-4244-0263-2
- [Y] PARK H-G ET AL: "Efficient coherent neighbour cell search for synchronous 3GPP LTE system", THE INSTITUTION OF ENGINEERING AND TECHNOLOGY JOURNAL, vol. 44, no. 21, 9 October 2008 (2008-10-09), pages 1267 - 1268, XP006031901, ISSN: 1350-911X
- [Y] SAMIR OMAR ET AL: "Performance analysis of general pilot-aided linear channel estimation in LTE OFDMA systems with application to simplified MMSE schemes", IEEE 19TH INTERNATIONAL SYMPOSIUM ON PERSONAL, INDOOR AND MOBILE RADIO COMMUNICATIONS, 15 September 2008 (2008-09-15), NJ, USA, pages 1 - 6, XP031371485, ISBN: 978-1-4244-2643-0
- [Y] XIAOLIN HOU ET AL: "Robust channel estimator for MIMO-OFDM systems with FPGA implementation", IEEE 14TH ASIA-PACIFIC CONFERENCE ON COMMUNICATIONS, 14 October 2008 (2008-10-14), NJ, USA, pages 1 - 5, XP031417979, ISBN: 978-4-88552-232-1
- [A] BRANISLAV M POPOVIC ET AL: "Primary Synchronization Signal in E-UTRA", IEEE 10TH INTERNATIONAL SYMPOSIUM ON SPREAD SPECTRUM TECHNIQUES AND APPLICATIONS, ISSSTA '08, 25 August 2008 (2008-08-25), NJ, USA, pages 426 - 430, XP031319050, ISBN: 978-1-4244-2203-6

## Cited by

CN103379059A; CN103491041A; CN106160969A; KR101405150B1

## Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK TR

## Designated extension state (EPC)

AL BA RS

## DOCDB simple family (publication)

**EP 2264961 A1 20101222**; CN 102461102 A 20120516; JP 2012530435 A 20121129; JP 5661753 B2 20150128; US 2012163503 A1 20120628; US 8804863 B2 20140812; WO 2010145832 A1 20101223

## DOCDB simple family (application)

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